82691

S/062/60/000/008/005/012
B004/B054

5.3700

AUTHORS: Zakharkin, L. I., and Gavrilenko, V. V.

TITLE: The Effect of Sulfur, Selenium, and Sulfur Chlorides on Aluminum Trialkyls

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 8, pp 1391-1398

TEXT: The authors studied the reaction of triethyl-, tripropyl-, and triisobutyl aluminum with sulfur in the absence of solvents. At a ratio 1:1 of the reagents, the reaction already proceeded at 40 - 60°C according to the equation $R_3Al + S \rightarrow R_2AlSR \xrightarrow{H_2O} RSH$. The compound R_2AlSR can be distilled off in the vacuum in an undecomposed state, and under the action of water yields the mercaptan RSH. At a ratio of S : R_3Al = 2 : 1, the reaction proceeds in a more complicated manner. Disulfides, sulfides, and polysulfides are formed, but not the compounds $RAl(SR)_2$. For this reaction, the equation

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$$R_3Al + 2S \longrightarrow RSR + RSSR + R_2AlSR + R_nAl_mS_q$$
$$\downarrow H_2O \qquad \downarrow H_2O$$
$$2RH + RSH \qquad nRH + qH_2S$$

is written down. The disulfide is also formed by the reaction of sulfur with R_2SlSR for which the authors assume the equation:
$R_2AlSR + S \longrightarrow R_2AlSSR \longrightarrow R_2S_2 + R_nAl_mS_q$. At a ratio of S : R_3Al = 3 : 1, the following reaction takes place: $R_3Al + 3S \longrightarrow R_2S + R_2S_2 + R_2S_3 +$

$+ R_nAl_mS_q$
$\downarrow H_2O$
$nRH + qH_2S$.

For the reaction of selenium with triethyl- and triisobutyl aluminum, the following equations are written down:

$R_3Al + Se \longrightarrow R_2AlSeR \xrightarrow{H_2O} 2RH + RSeH$ (reaction at about 70 - 80°C), and $R_3Al + 2Se \xrightarrow[H_2O]{\Delta} RSeH + R_2Se_2 + RH$ (reaction only at 140 - 150°C). In $R_3Al + 3Se$, diselenide is formed as a principal product besides selenide and selenole. Sulfur chlorides react violently with

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The Effect of Sulfur, Selenium, and Sulfur Chlorides on Aluminum Trialkyls

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aluminum trialkyls also in heptane solution with much sulfur being set free. With triisobutylene aluminum in etheric solution the reaction proceeds smoothly at -30 to +20°C. At a ratio of SCl_2 : $(i\text{-}C_4H_9)_3Al$ = 1 : 1.5, approximately equal amounts of diisobutyl sulfide and diisobutyl disulfide could be isolated. At a stoichiometric ratio, the reaction proceeded according to the equation $R_3Al + SCl_2 \rightarrow R_2S + R_2S_2 + R_2S_3$. For the reaction with S_2Cl_2, the equation $R_3Al + S_2Cl_2 \rightarrow R_2S + R_2S_2 + R_2S_3 + R_2S_x$ is written down. R_2S_x was a high-boiling fraction resulting in small quantity only. Isobutyl chloride was not formed in any reaction of triisobutyl aluminum with sulfur chlorides. In the experimental part of the paper, the authors indicate the formulas of the reactions carried out, the yields, the analytical data, and the physical data of the compounds obtained. There are 9 references: 2 Soviet, 1 British, 2 German, and 4 French.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental-organic Compounds of the Academy of Sciences, USSR)

SUBMITTED: January 30, 1959

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86416
S/062/60/000/008/032/033/XX
B013/B055

5.3700 1153 1209 1236

AUTHORS: ~~Zakharkin, L. I.~~, Gavrilenko, V. V., Parnes, Z. N., and Kursanov, D. N.

TITLE: On the Mode of Addition of Diisobutyl Aluminum Hydride to Dimethyl Fulvene

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 8, pp. 1519-1520

TEXT: This is a brief communication on the reaction between dimethyl fulvene and diisobutyl aluminum hydride. In this reaction, $HAlR_2$ adds to fulvene. Hydrolysis of the organo-aluminum compound leads to isopropyl cyclopentadiene, isobutane and aluminum hydroxide. From the product formed, no conclusions concerning the course of $HAlR_2$ addition can be drawn. The tracer method was applied in the present study. The organo-aluminum compound was hydrolyzed with deuterium oxide and the resulting deutero isopropyl cyclopentadiene was then subjected to a hydrogen exchange with C_2H_5OH in the presence of C_2H_5ONa. The reaction conditions were the

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On the Mode of Addition of Diisobutyl Aluminum Hydride to Dimethyl Fulvene

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same as in the hydrogen exchange of isopropyl cyclopentadiene with C_2H_5OD. These experiments show that the addition of diisobutyl aluminum hydride to the exocyclic double bond of dimethyl fulvene proceeds in such a manner, that AlR_2 adds to the cyclopentadiene ring and hydrogen to the isopropyl group. To investigate the conditions of hydrogen exchange, the authors undertook the preliminary experiments summarized in Table 1. From these data it is seen that the experimental conditions of the fourth experiment were optimal: 18 ml alcohol, 0.05 g Na, 1.60 g hydrocarbon, and a reaction time of 3 h. These conditions were then applied for investigating the exchange reaction between diisopropyl cyclopentadiene and C_2H_5OH. The hydrocarbon separated after the exchange was re-entered into the reaction. The experimental data show that at least 98% of the deuterium was bound to the ring. There are 2 tables and 7 references: 2 Soviet, 3 US, and 2 German.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

SUBMITTED: January 16, 1960

Card 2/2

84862

S/062/60/000/010/016/018
B015/B064

111250

AUTHORS: Zakharkin, L. I. and Stanko, V. I.

TITLE: Simple Synthesis of Triallyl Boron and Some of Its Conversions

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 10, pp. 1896 - 1898

TEXT: A simple method of preparing triallyl boron is described, which differs from the syntheses of A. V. Topchiyev et al. (Refs. 2-4), and B. M. Mikhaylov and F. B. Tutorskaya (Ref.5), respectively, insofar as allyl aluminum sesquibromide is used, and the reactions proceed as follows: either

$$(C_3H_5)_3Al_2Br_3 + BF_3(C_2H_5)_2O \longrightarrow B(C_3H_5)_3 + AlF_3 + AlBr_3(C_2H_5)_2O \quad \text{or}$$

$$(C_3H_5)_3Al_2Br_3 + B(OC_4H_9)_3 \longrightarrow B(C_3H_5)_3 + AlBr_3 + Al(OC_4H_9)_3.$$

In contrast to the data of Topchiyev et al., triallyl boron was found to

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Simple Synthesis of Triallyl Boron and Some of Its Conversions

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react readily with bromine, also at temperatures down to -35°C, with the C-B bond being ruptured, bromine adding to the double bond, and 1,2,3-tribromopropane forming as the principal product. A disproportionation under the formation of the dibutyl ester of allyl boric acid takes place when triallyl boron is heated with tributyl borate. With mercury chloride, triallyl boron forms apparently allyl mercury chloride in an aqueous solution; it was, however, not possible to isolate this compound. In the reaction of triallyl boron with thallium trichloride in an aqueous solution, the latter is quantitatively converted into thallium monochloride. The individual steps of preparation are described. There are 9 references: 4 Soviet, 2 German, 1 US, 1 Japanese, and 1 French.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental-organic Compounds of the Academy of Sciences USSR)

SUBMITTED: March 30, 1960

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87171

S/062/60/000/012/015/020
B013/B054

53700

AUTHOR: Zakharkin, L. I.

TITLE: Reduction of Alkyl Chlorosilanes With Sodium Hydride in the Presence of Triethyl Aluminum

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 12, pp. 2244-2245

TEXT: The author briefly reports on the reduction of alkyl (and aryl) chlorosilanes with sodium hydride. It was found that the reduction of chlorosilanes proceeds easily at 60°-80°C when small amounts of triethyl aluminum are added to the sodium hydride suspension in aromatic hydrocarbons (benzene, toluene, xylene, etc.). Due to its low reactivity to chlorosilanes at these temperatures, the triethyl aluminum primarily reacts with sodium hydride to form the $NaAl(C_2H_5)_3H$ complex which is soluble in hydrocarbon. This complex is a reducing agent which transforms the Si—Cl bond to Si—H according to the following scheme: $NaAl(C_2H_5)H + \equiv Si-Cl \rightarrow \equiv SiH + (C_2H_5)_3Al + NaCl$. The nascent triethyl aluminum

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Reduction of Alkyl Chlorosilanes With Sodium Hydride in the Presence of Triethyl Aluminum

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reacts with a new portion of the hydride, transferring it into the solution in the form of a complex, and so forth. The reduction is carried on with continuous presence of $NaAl(C_2H_5)_3H$ in the reaction mixture. The author reduced in this way: trimethyl chlorosilane, 89% yield of trimethyl silane, boiling point 6°-7°C; dimethyl dichlorosilane, 84% yield of dimethyl silane, boiling point -20° - -18°C; diethyl chlorosilane, 92% yield of diethyl silane, boiling point 56°-57°C; methyl-n-butyl dichlorosilane, 82% yield of methyl-n-butyl silane, boiling point 81°-82°C; methyl trichlorosilane, 72% yield of methyl silane; phenyl-methyl dichlorosilane, 71% yield of phenyl-methyl silane, boiling point 46°-47°C (20 mm Hg); phenyl trichlorosilane, 74% yield of phenyl silane, boiling point 60°-62°C (100 mm Hg); γ-phenyl-propyl trichlorosilane, 82% yield of γ-phenyl-propyl silane, boiling point 76.5°-77°C (8 mm Hg). There are 4 non-Soviet references.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental-organic Compounds of the Academy of Sciences USSR)

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87171

Reduction of Alkyl Chlorosilanes With Sodium Hydride in the Presence of Triethyl Aluminum

S/062/60/000/012/015/020
B013/B054

SUBMITTED: May 4, 1960

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87172

S/062/60/000/012/016/020
B013/B054

5.3700

AUTHORS: Zakharkin, L. I. and Gavrilenko, V. V.

TITLE: Use of Sodium Diisobutyl Aluminum Dihydride as a Reducing Agent

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 12, pp. 2245-2247

TEXT: By the example of $NaAl(i\text{-}C_4H_9)_2\text{-}H_2$ ($NaAl(i\text{-}C_4H_9)_2H_2$), the authors report on the possibility of using dialkyl aluminum hydride complexes with sodium hydride, $NaAlR_2H_2$, as a reducing agent for various functional groups in organic compounds. Sodium diisobutyl aluminum dihydride can be easily obtained by reaction of sodium hydride with diisobutyl aluminum hydride in benzene or toluene solution at 80°-100°C. Due to the solubility of $NaAl(i\text{-}C_4H_9)_2H_2$ in nonethereal media, it can be used as a reducing agent in cases where the application of ether is inconvenient or impossible. The authors reduced methyl benzoate, methyl ester of δ-chlorovaleric acid,

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Use of Sodium Diisobutyl Aluminum Dihydride as a Reducing Agent

benzaldehyde, cinnamic aldehyde, acetophenone, phenyl acetone, and cyclohexanone to the corresponding alcohols according to the following schemes:

$$R-COOR' + NaAl(i\text{-}C_4H_9)_2H_2 \rightarrow \left[\begin{matrix} RCH_2O \\ R'O \end{matrix}\!\!>\!Al(i\text{-}C_4H_9)_2\right] Na \xrightarrow{H_2O} RCH_2OH$$

$$2RR'CO + NaAl(i\text{-}C_4H_9)_2H_2 \rightarrow \left[(RR'CHO)_2Al(i\text{-}C_4H_9)_2\right] Na \xrightarrow{H_2O} 2RR'CHOH$$

Yields are 80-95%. Depending on conditions, the reduction of benzonitrile proceeds to the aldehyde or amine

$$2C_6H_5CN + NaAl(i\text{-}C_4H_9)_2H_2 \xrightarrow{H_2O} 2C_6H_5CHO$$

$$C_6H_5CN + NaAl(i\text{-}C_4H_9)_2H_2 \xrightarrow{H_2O} C_6H_5CH_2NH_2$$

By reduction of dimethyl amide of caprylic acid with dihydride in benzene solution, dimethyl octylamine was obtained in an 83.5% yield. Both the production of sodium diisobutyl aluminum dihydride and the reduction of the functional groups were conducted in an inert medium (nitrogen). There

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Use of Sodium Diisobutyl Aluminum Dihydride as a Reducing Agent

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are 5 non-Soviet references.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental-organic Compounds of the Academy of Sciences USSR)

SUBMITTED: May 14, 1960

X

Card 3/3

NESMEYANOV, A.N., akademik; FREYDLINA, R.Kh.; BELOV, V.N., prof.; KAHAPETYAN, Sh.A.; SMOL'YANINOVA, Ye.K.; SOLOV'YEVA, N.P.; OGORODNIKOVA, Ye.A.; VASIL'YEVA, Ye.I.; ZAKHARKIN, L.I.; SHEVYAKOVA, N.N.

Synthesis of macrocyclic lactones and oxalactones based on ethylene and carbon tetrachloride. Zhur. VKHO 5 no.4:371-376 '60. (MIRA 13:12)

1. Chlen-korrespondent Akademii nauk SSSR (for Freydlina).
(Lactones)

ZAKHARKIN, L.I.; OKHLOBYSTIN, O.Yu.

Interalkylation reactions in the series of elements of the third and second groups (Al, B, Zn, Mg). Zhur.ob.khim. 30 no.7:2134-2138 Jl '60. (MIRA 13:7)

1. Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR.
(Alkylation) (Aluminum organic compounds)
(Boron organic compounds)

ZAKHARKIN, L.I.

Action of sodium thiophenolate on 1,1,1-trichloropentane. Zhur. ob. khim. 30 no.12:3960-3964 D '60. (MIRA 13:12)

1. Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR.
(Benzenethiol) (Pentane)

69994

5.3931

S/020/60/131/05/023/069
B011/B117

AUTHOR: Zakharkin, L. I.

TITLE: Formation of a Linear Dimer of Isoprene on the Complex Catalyst $(iso\text{-}C_4H_9)_3Al + TiCl_4$

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 5, pp 1069-1071 (USSR)

TEXT: Apparently, linear dimers have never been hitherto isolated in pure state, and their structures have not yet been established. It was found by the author in his work that, on a complex catalyst (Ref 7), isoprene forms chiefly di-, tri-, and tetrameric products, whereas only a small amount of a polymer is formed. The reaction was performed by the author in a toluene solution at 75-85°. The molar ratio of the components was $(iso\text{-}C_4H_9)_3Al : TiCl_4 = 2.25\text{-}3.25 : 1$.

The reaction proceeded rapidly with practically all the isoprene being reacted. At lower temperatures and if the ratio between the components of the catalyst is decreased, the amount of the copolymer increases. An increase in the ratio mentioned leads to a retardation, or the reaction does not take place at all. From this, the author comes to the conclusion that the reaction is actually catalyzed by the complex catalyst. The dimeric and trimeric products are formed in about equal amounts. At the most 10% of a polymer are formed. In this case,

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Formation of a Linear Dimer of Isoprene on the Complex Catalyst $(iso\text{-}C_4H_9)_3Al + TiCl_4$

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B011/B117

the author studied chiefly the dimeric compounds. By fractionation, he obtained the following compounds from the dimer mixture: 1) "Lebedev hydrocarbon" - 2,4-dimethyl-4-ethenyl-1-cyclohexene, boiling point 48-48.5° at 14 torr. 2) A linear isoprene dimer was obtained as the main product. The structure of the 2,6-dimethyloctatriene-1,3,6 $CH_2{=}C(CH_3)CH{=}CH{-}CH_2{-}C(CH_3){=}CH{-}CH_3$ with a boiling point of 57-58° is attributed to this compound by the author. 3) A small quantity of apparently eight-membered dimers with a boiling point of 66-68° at 12 torr. Product 2) is different from all known linear isoprene dimers occurring in nature (myrcene and ocimene). By hydrogenation, 2,6-dimethyl octane with a boiling point of 158-159° is formed from product 2) If reduced with sodium in alcohol, a dihydro compound $C_{10}H_{48}$ (boiling point 162.5-163.5°) apparently 2,6-dimethyl octadiene-2,6 which is readily oxidized in the air, is formed from product 2). Product 2) gives a vigorous reaction with maleic anhydride to yield an adduct (boiling point 167-168°). From the adduct, a dicarboxylic acid (boiling point 137-138°) is formed by basic hydrolysis. The author concludes from reactions with ozone and other compounds that there are $CH_3CH{=}C<$ and $CH_2{=}C<$ groups contained in dimer 2. Moreover, he came to the

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Formation of a Linear Dimer of Isoprene on the Complex Catalyst (iso-$C_4H_9)_3Al + TiCl_4$

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B011/B117

conclusion that the conjugated double-bond system is to be found on the side of the methylene group $CH_2=\overset{|}{C}-\overset{|}{C}-C<$. This is confirmed by the structure suggested by the author. The trimeric compounds were studied at first. They consist of both linear and cyclic products, but their structures have not yet been established. A fraction recovered from them (boiling point 117-118°) was no purely aliphatic trimer. The structures of the tri- and tetrameric compounds are under further study. I. N. Nazarov is mentioned. There are 9 references, 4 of which are Soviet.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences, USSR)

PRESENTED: December 18, 1959, by I. L. Knunyants, Academician

SUBMITTED: December 16, 1959

Card 3/3

ZAKHARKIN, L.I.; KORNEVA, V.V.

Synthesis of ω-aminododecanoic acid. Izv. AN SSSR. Otd. khim. nauk no. 1:159-160 Ja '61. (MIRA 14:2)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Dodecanoic acid)

89913

S/062/61/000/002/010/012
B115/B207

15.8114

AUTHORS: Zakharkin, L. I., Kolesnikov, G. S., Davydova, S. L., Gavrilenko, V. V., and Kamyshova, A. A.

TITLE: Dialkyl aluminum derivatives of saturated and unsaturated acids

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, no. 2, 1961, 364-365

TEXT: The authors aimed at obtaining dialkyl aluminum methacrylates and acrylates and studying their properties. The compounds of the $(RCOO)_xAlR'_{3-x}$ type have not yet been described in publications. First, the authors tried to obtain salts of dialkyl aluminum and of fatty acids by interaction of the potassium salts of these acids with dialkyl aluminum chlorides, but without success probably due to complex formation of organoaluminum compounds with KCl. Subsequently, the authors applied the interaction of trialkyl aluminum with free saturated and unsaturated acids by the following scheme:

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Dialkyl aluminum derivatives of ...

$RCOOH + AlR'_3 \longrightarrow RCOOAlR'_2 + R'H$. The reaction proceeded in hexane or benzene under intensive stirring. The separation of saturated hydrocarbons in quantities close to calculations was observed in the reaction process. By this method, the following substances were obtained from dialkyl aluminum and saturated acids: diisobutyl aluminum acetate, diisobutyl aluminum propionate; from dialkyl aluminum and unsaturated acids: diethyl aluminum methacrylate, diethyl aluminum acrylate, and diisobutyl aluminum methacrylate. The substances obtained are transparent, colorless, easily distillable and viscous oils which fume in the air and inflame sometimes. The table shows their constants. Salts from dialkyl aluminum and unsaturated acids polymerize both thermally and in the presence of initiators such as dinitrile of azoisobutyric acid. They are viscous, transparent polymers which are nearly insoluble in organic solvents, and swell in some polar media such as amyl acetate or dimethyl formamide. Salts from dialkyl aluminum and unsaturated acids copolymerize well with methyl methacrylate and styrene in all ratios (1 : 0.5, 1 : 1, 1 : 2, 1 : 4, etc.), and are solid, transparent, vitreous polymers practically insoluble in organic solvents.

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Dialkyl aluminum derivatives of ...

Homeopolymers decompose in the air, while copolymers do not change in the air (if they are not kept there for too long). All reactions with organoaluminum compounds were conducted in pure nitrogen. There are 1 table and 8 references: 5 Soviet-bloc and 2 non-Soviet-bloc.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental-organic Compounds of the Academy of Sciences USSR)

SUBMITTED: July 4, 1960

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Dialkyl aluminum derivatives of ...

Таблица

Физические свойства солей диалкилалюминия

R	R'	1. Т. кип., °C (при мм рт. ст.)	2. Выход, %	3. Найдено Al, %	4. Вычислено Al, %
CH_3—	i-C_4H_9	145—146(3)	85	13,52 13,15	13,47
C_2H_5—	i-C_4H_9	148—149(2)	85	12,11 12,10	12,41
$CH_2=C(CH_3)$—	i-C_4H_9	156—157(2)	75	•	•
$CH_2=C(CH_3)$—	C_3H_6	126—127(3)	50	15,71 15,75	15,88
$CH_2=CH$—	C_3H_6	131—133(6)	51	17,40	17,30

* Найдено: C 63,75; H 10,57%. Вычислено: C 63,71; H 10,18%.

3. 4.

Legend to the table: 1) Boiling point, °C (mm Hg), 2) yield, 3) found, 4) calculated

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S/062/61/000/002/011/012
B115/B207

5 3700

AUTHORS: Zakharkin, L. I., and Zhigareva, G. G.

TITLE: Reaction of triisobutyl boron and diborane with styrene

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, no. 2, 1961, 369-370

TEXT: The authors studied the interaction of triisobutyl boron and diborane with styrene since, in the case of styrene, contrary to other α-olefins, in the reaction with triisobutyl aluminum and dialkyl aluminum hydride an aluminum atom is added to the α- and β-carbon atoms of the vinyl group (L. I. Zakharkin and V. V. Gavrilenko, Izv. AN SSSR. Otd. khim. n. 1959, 1507). The displacement reaction of styrene by triisobutyl boron and the addition of diboron lead to a synthesis of the two possible products:

$$C_6H_5CH = CH_2 + (i\text{-}C_4H_9)_3B \longrightarrow (C_6H_5CH_2CH_2)_3B + (C_6H_5\overset{CH_3}{\overset{|}{C}}H)_3B + C_4H_8$$

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Reaction of triisobutyl boron ...

$$C_6H_5CH = CH_2 + B_2H_6 \longrightarrow (C_6H_5CH_2CH_2)_3B + (C_6H_5\overset{CH_3}{\overset{|}{C}}H)_3B$$

The displacement reaction was conducted at 150-160°C. The resulting triphenyl ethyl boron when oxidized gave a mixture of α- and β-phenyl-ethyl alcohols in a high yield. The composition of the mixture was determined in two ways: 1) By oxidation with chromic anhydride and by precipitation of acetophenone in the form of 2,4-dinitro-phenyl hydrazone, 2) by infrared spectrometry. The phenyl-methyl carbinol content in the mixture was ~ 15%. The addition of diborane to styrene was carried out in a tetrahydrofuran solution. The reaction product was divided. One part was immediately subjected to oxidation, the other heated to 160-170°C after removal of the tetrahydrofuran, and oxidized. The mixture of isomeric phenyl-ethyl alcohols resulting from oxidation contained in both cases 15-18% phenyl-methyl carbinol. Furthermore, the authors studied the possibility of isomerization of the primary derivative $(C_6H_5CH_2CH_2)_3B$ to the secondary derivative $[C_6H_5CH(CH_3)]_3B$.

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Reaction of triisobutyl boron ...

By the following scheme: $C_6H_5CH_2CH_2MgBr + BF_3 \cdot (C_2H_5)_2O \longrightarrow (C_6H_5CH_2CH_2)_3B$ the authors obtained tri-(β-phenyl-ethyl)boron. It was heated to 160-170°C and oxidized. A mixture of isomeric phenyl-ethyl alcohols was thus obtained, containing 12-14% phenyl-methyl carbinol. Consequently, tri-(β-phenyl-ethyl)boron isomerized to a certain degree to tri-(α-phenyl-ethyl)boron. These compounds were, under certain conditions, in equilibrium

$$(C_6H_5CH_2CH_2)_3B \rightleftharpoons (C_6H_5\underset{\displaystyle CH_3}{\underset{|}{C}}H)_3B$$

The authors thank N. A. Chumayevskiy for the quantitative determination of mixtures at his optical laboratory. Finally, the following summary is given: 1) Tri-(phenyl-ethyl)boron containing a boron atom in α- and β-position to the phenyl group forms in the reaction of triisobutyl boron and diborane with styrene. 2) Tri-(β-phenyl-ethyl)boron isomerizes when heated partly to tri-(α-phenyl-ethyl)boron. There are 5 references: 1 Soviet-bloc and 4 non-Soviet-bloc.

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Reaction of triisobutyl boron ...

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental-organic Compounds of the Academy of Sciences USSR)

SUBMITTED: July 6, 1960

Card 4/4

ZAKHARKIN, L.I.; KORNEVA, V.V.; IOGANSEN, A.V.

Admixture of hydrogen chlorides and acetic acid to isomeric 1, 5, 9-cyclododecatrienes. Dokl.AN SSSR 138 no.2:373-376 My '61. (MIRA 14:5)

1. Institut elementoorganicheskoy khimii Akademii nauk SSSR. Predstavleno akademikom M.I.Kabachnikom.
(Hydrogen chloride) (Acetic acid) (Cyclododecane)

ZAKHARKIN, L.I.; SAVINA, L.A.

Synthesis of simple aluminum enolates, Izv. AN SSSR. Otd. khim. nauk no.2:378-F '61. (MIRA 14:2)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Aluminum organic compounds)

S/026/61/000/004/002/002
A166/A127

AUTHORS: Zakharkin, L.I., Doctor of Chemical Sciences, and Okhlobystin, O.Yu.

TITLE: Aluminum-Organic Compounds

PERIODICAL: Priroda, no. 4, 1961, 89-92

TEXT: The authors describe the properties of aluminum-organic compounds and their uses in the polymerization of olefines, spirit production and the synthesis of carbonic acids. The Institut elementoorganicheskikh soyedineniy AN SSSR (Institute of Elemental-Organic Compounds, AS USSR) has found that carbonic acids can be produced by the action of dioxide on aluminum trialkyl at high pressures and temperatures:

$$(C_2H_5)_3 Al + 3CO_2 \rightarrow (C_2H_5COO)_3Al.$$

Card 1/2

S/026/61/000/004/002/002
A166/A127

Aluminum-Organic Compounds

The method can be used to produce higher fatty acids used in the manufacture of synthetic detergents and emulsifiers. The use of aluminum trialkyl gives higher fatty acids of normal structure and without side branches which do not give fats toxic to the human body. Thus the method can be used for synthesizing edible fats simply from crude oil. It has further been found that aluminum-organic compounds can be used to synthesize alkyl derivatives of zinc, cadmium, boron, gallium, silicon, germanium, lead, tin, mercury, thallium, phosphorus, arsenic, antimony and bismuth. The method has been used to produce tetraethyl lead, valuable as an anti-detonator in motor fuels. There is 1 diagram.

ASSOCIATION: Institut biokhimii im. A.N. Bakha AN SSSR (Institute of Biochemistry imeni A.N. Bakh, AS USSR), Moscow.

Card 2/2

BASHKIROV, A.N.; KAMZOLKIN, V.V.; SOKOVA, K.M.; ANDREYEVA, T.P.; KORNEVA, V.V.; ZAKHARKIN, L.I.

Synthesis of cyclododecanol by the liquid-phase oxidation of cyclododecane. Neftekhimiia 1 no.4:527-534 Jl-Ag '61. (MIRA 16:11)

1. Institut neftekhimicheskogo sinteza AN SSSR i Institut elementoorganicheskikh soyedineniy AN SSSR.

BEREZIN, I.V.; BYKOVCHENKO, V.G.; KORNEVA, V.V.; ZAKHARKIN, L.I.

Investigation of the kinetics and mechanism of liquid-phase oxidation of cyclododecane by molecular oxygen. Report No. 2. Kinetics of the accumulation of intermediate products. Neftekhimiia 1 no.4:541-547 Jl-Ag '61. (MIRA 16:11)

1. Moskovskiy gosudarstvennyy universitet, khimicheskiy fakul'tet i Institut elemento-organicheskikh soyedineniy AN SSSR.

ZAKHARKIN, L.I.; KHORLINA, I.M.

Reduction of methylcyclohexanes with diisobutylaluminum hydride. Izv.AN SSSR,Otd.khim.nauk no.6:1144-1145 Je '61. (MIRA 14:6)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Cyclohexane) (Aluminum hydrides)

ZAKHARKIN, L.I.; KHORLINA, I.M.

Preparation of dialkyl aluminum hydrides from dialkyl aluminum halides and sodium hydride. Izv.AN SSSR.Otd.khim.nauk no.10: 1894-1895 O '61. (MIRA 14:10)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Aluminum compounds)

ZAKHARKIN, L.I.; KORNEVA, V.V.; KUNITSKAYA, O.M.

Synthesis of 1, 10-decanedicarboxylic acid from 1, 5, 9-cyclododecatriene. Izv.AN SSSR.Otd.khim.nauk no.10:1908-1909 O '61. (MIRA 14:10)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Dodecanedioic acid)

ZAKHARKIN, L.I.; STANKO, V.I.

Complexes of decaborane with organic compounds of phosphorus and arsenic. Izv.AN SSSR.Otd.khim.nauk no.11:2078-2079 N '61. (MIRA 14:11)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Decarborane) (Phosphorus organic compounds)
(Arsenic organic compounds)

ZAKHARKIN, L.I.; STANKO, V.I.; BRAITSEV, V.A.

Reactions of tetrahydrofuran and tetrahydropyan with trimethylbromosilane and trimethylchlorosilane. Izv.AN SSSR.Otd.khim.nauk no.11:2079-2081 N '61. (MIRA 14:11)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Furan) (Pyran) (Silane)

ZAKHARKIN, L.I.; STANKO, V.I.; OKHLOBYSTIN, O.Yu.

Reactions of decaborane and pentaborane with mercaptans and sulfides. Izv.AN SSSR.Otd.khim.nauk no.11:2083-2084 N '61. (MIRA 14:11)

1. Institut organicheskoy khimii im. N.D.Zelinskogo i Institut elementoorganicheskikh soyedineniy AN SSSR.
(Decaborane) (Pentaborane) (Sulfides)

ZAKHARKIN, L.I.

Action of butyllithium and butylmagnesium bromide on trans-epoxycyclodecane. Izv. AN SSSR Otd.khim.nauk no.12:2245-2246 D '61. (MIRA 14:11)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Epoxy compounds) (Organometallic compounds)

5 2100

30167
S/062/61/000/012/008/012
B117/B147

AUTHORS: Zakharkin, L. I., and Gavrilenko, V. V.

TITLE: Simple method of producing sodium- and potassium aluminum hydrides

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 12, 1961, 2246 - 2248

TEXT: A simple method of producing sodium- and potassium aluminum hydrides is described. It was found that sodium aluminum hydride is readily obtained in high yields from aluminum chloride and sodium chloride in the presence of catalytic amounts of aluminum trialkyl, dialkyl aluminum hydrides, or their complexes with sodium hydride. According to this method, 2-4% of aluminum trialkyl is added to a suspension of sodium hydride in benzene. A concentrated solution of aluminum chloride in diethyl ether is added to the mixture which is heated to 60 - 80°C and stirred. The temperature is maintained at 65 - 75°C at the expense of the reaction temperature. Reaction proceeds rapidly. The entire procedure takes 3 - 4 hr.

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Simple method of producing...

The reaction mixture is centrifuged or filtered. The entire catalyst is contained in the filtrate in the form of a complex with sodium hydride, and can be further utilized. Sodium aluminum hydride is extracted from the solid residue with tetrahydrofuran or another solvent. The yield is 90% of the theoretical amount. In this reaction, the sodium hydride is converted by means of the organic aluminum compound into the soluble state in the form of $NaH \cdot AlR_3$- or $NaH \cdot AlR_2H$ complexes, which effect reduction of the aluminum chloride. The method was also used for the synthesis of potassium aluminum hydride diisobutyl aluminum hydride serving as catalyst. There are 3 references: 1 Soviet-bloc and 2 non-Soviet. The two references to English-language publications read as follows: A. E. Finholt, E. C. Jacobson, A. E. Ogard, P. Thomson, J. Amer. Chem. Soc. 77, 4163 (1955); A. E. Finholt, G. D. Barbaras, G. K. Barbaras, G. Urry, T. Wartik, H. G. Schlesinger, J. Inorgan. Nuclear Chem. 1, 317 (1955).

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

Card 2/2

30168
S/062/61/000/012/009/012
B117/B147

5.3700

AUTHORS: Zakharkin, L. I., Okhlobystin, O. Yu., and Strunin, B. N.

TITLE: Synthesis of organic beryllium compounds

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 12, 1961, 2254

TEXT: In the present "Letter to the Editor", the authors report on studies of the noncatalytic interaction of metals of the 2nd group with halogen alkyls. Powdery beryllium was found to react with halogen alkyls even in total absence of ether or any other catalyst. With sufficient duration of the process, alkyl beryllium halides are obtained in satisfactory yield:

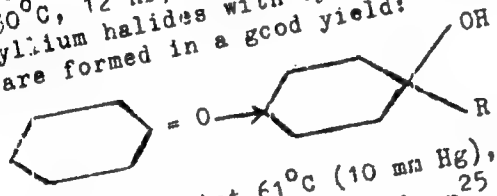
$$Be + RHal \xrightarrow[12 - 60\ hr]{130^{\circ}C} RBeHal$$

$R = C_2H_5$, Hal = I; $R = C_4H_9$, Hal = Br, I; $R = C_5H_{11}$, C_8H_{17}, Hal = I.
Similar to alkyl magnesium halides, alkyl beryllium halides are insoluble, and separate as a precipitate during the reaction. Analysis shows that

Card 1/3

Synthesis of organic beryllium...

the yield of butyl beryllium iodide reaches 65-70% of the theoretical amount (130°C, 12 hr, without solvent). During reaction of the obtained alkyl beryllium halides with cyclohexanol the corresponding 1-alkyl cyclohexanols are formed in a good yield:



$R = C_2H_5$, boiling point 61°C (10 mm Hg), n_D^{25} 1.4623; d_4^{25} 0.9226; $R = C_4H_9$, boiling point 90 - 91°C (10 mm Hg); n_D^{25} 1.4635; d_4^{25} 0.9141; $R = C_5H_{11}$, boiling point 97°C (5 mm Hg); n_D^{20} 1.4667; d_4^{20} 0.9162; $R = C_8H_{17}$, boiling point 130 - 131°C (10 mm Hg); n_D^{25} 1.4610; d_4^{25} 0.8633. [Abstracter's note: Essentially complete translation.] There is 1 non-Soviet reference. The reference to the English-language publication reads as follows: H. Gilman, W. Schulze, J. Amer. Chem. Soc. 49, 2904 (1927).

Card 2/3

30168
S/062/61/000/012/009/012
B117/B147

Synthesis of organic beryllium...

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

SUBMITTED: October 26, 1961

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Card 3/3

30169

S/062/61/000/012/010/012
B117/B147

5 3700

AUTHORS: Zakharkin, L. I., Okhlobystin, O. Yu., and Strunin, B. N.

TITLE: Organic magnesium synthesis of elemental organic compounds in ether-free medium

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 12, 1961, 2254 - 2255

TEXT: In the present "Letter to the Editor", the authors report on studies of noncatalytic organic magnesium synthesis. It was found that magnesium easily reacts exothermically with halogen alkyls either without a solvent or in various paraffins, and that for the synthesis no specific solvents of the isopropyl benzene type are required. Organic magnesium synthesis in the absence of ether was used for the production of various elemental organic compounds by one- and two-step synthesis of (aryl) derivatives of a number of elements: $EX_n + nRMgX \longrightarrow ER_n + nMgX_2$

$EX_n + nMg + nRX \longrightarrow ER_n + nMgX_2$

Card 1/2

ZAKHARKIN, L.I.; SOROKINA, L.P.; KHORLINA, I.M.

Action of triisobutylaluminum on cyclohexanone. Zhur.ob.khim. 31 no.10:3311-3316 O '61. (MIRA 14:10)
(Aluminum) (Cyclohexanone)

30190

S/079/61/031/011/011/015
D228/D305

5.3700

AUTHORS: Zakharkin, L. I., and Okhlobystin, O. Yu.

TITLE: Synthesis of some metalloorganic compounds by means of the alumino trialkyls

PERIODICALS: Zhurnal obshchey khimii, v. 31, no. 11, 1961, 3662-3665

TEXT: This study of the reaction of triethyl- and triisobutylaluminum with the chlorides of Zn, B, Ga, Ge, and Sn is a continuation of previous research by L. I. Zakharkin and O. Yu. Okhlobystin (Ref. 1: Dokl. AN SSSR, 116, 236, 1957; Zh. obshch. khimii, 30, 2134, 1960) on the use of alumino trialkyls in the synthesis of metalloorganic compounds. Anhydrous $ZnCl_2$ was reacted with Et_3Al by heating the mixture for 3 hr. at 100°, the diethylzinc then being separated from the $Et_3Al_2Cl_3$ by vacuum distillation. The reaction is reversible since the authors similarly prepared a mixture of ethyl- and diethylaluminum chloride from $AlCl_3$ and Et_2Zn. Trimethylgallium was synthesized from Me_3Al and $GaCl_3$

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Synthesis of some...

by heating the mixture for 2 hr. at 80° and distilling off the Me_3Ge. In the case of tetraethylgermenium, the original materials - Et_3Al and $GeCl_4$ - were heated for 6 hr. at 120 - 130°, after which the solution was diluted with ether and decomposed by NaOH; Et_4Ge was then distilled off from the washed and dried ether layer. A similar procedure was adopted in the preparation of tetraisobutylgermenium from $GeCl_4$ and iso-Bu_3Al. The synthesis of isobutylboron dichloride involves the interaction of BCl_3 and iso-Bu_3Al at 2° for approximately 1.5 hr., followed by the gradual heating of the solution to room-temperature and its subsequent distillation; ethylboron dichloride was synthesized from BCl_3 and Et_3Al at a temperature of about -5°. The authors prepared diisobutyl stannous oxide by stirring a solution of anhydrous $SnCl_4$ and iso-Bu_3Al for 2 hr. at 110 - 115°. This was decomposed by NaOH, and the residue was

Card 2/3

S/079/61/031/011/011/015
D228/D305

Synthesis of some...

then washed and dried; it may be purified by reprecipitation from an HCl solution with NH_3. There are 11 references: 2 Soviet-bloc and 9 non-Soviet-bloc. The references to the 4 most recent English-language publications read as follows: C. A. Kraus, E. A. Flood, J. Am. Chem. Soc., 54, 1635 (1932); P. B. Brindly, W. Gerrard, M. F. Lappert, J. Chem. Soc., 1956, 824; P. A. McCusker, G. F. Hennion, E. A. Ashby, J. Am. Chem. Soc., 79, 5182 (1957); J. B. Honeycutt, J. M. Riddle, J. Am. Chem. Soc., 82, 3051 (1960).

SUBMITTED: November 18, 1960

X

Card 3/3

5

ZAKHARKIN, L.I., KORCHEVA, V.V., KUKITSYNSKAYA, G.M., BASHKIROVA, A.N., KAMZOLKIN, V.V., SOKINA, K.M.

New monomer for the production of the syntheric fiber dcds-Kalaktan.

Report to be submitted for the 12th Conference on high molecular weight compounds devoted to monomers, Baku, 3-7 April 62

ZAKHARKIN, L.I.; KORNEVA, V.V.; KAMZOLKIN, V.V.; SOKOVA, K.M.; ANDREYEVA, T.P.; BASHKIROV, A.N.

Preparation of ω-dodecalactam from 1,5,9-cyclododecatriene. Neftekhimia 2 no.1:106-109 Ja-F '62. (MIRA 15:5)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Lactams) (Cyclododecatriene)

ZAKHARKIN, L.I.; BAVINA, L.A.

Synthesis of orgenoaluminum compounds containing a silicon atom in their alkyl chain. Izv. AN SSSR Otd.khim.nauk no.2:253-256 F '62. (MIRA 15:2)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Aluminum organic compounds)
(Silicon organic compounds)

ZAKHARKIN, L.I.; SOROKINA, L.P.

Condensation of β,β-dichloroacrolein with cyclic ketones and the cyclization of condensation products obtained to γ-pyrone derivatives. Izv. AN SSSR Otd.khim.nauk no.2:287-290 F '62. (MIRA 15:2)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Acrolein)
(Ketones)
(Pyranone)

ZAKHARKIN, L.I.; KOVREDOV, A.I.

Synthesis of pentamethylene- and hexamethylenediboric acids.
Izv. AN SSSR Otd.khim.nauk no.2:357-358 F '62. (MIRA 15:2)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Boric acid)

ZAKHARKIN, L.I.; KOVREDOV, A.I.

Addition of diborane to isoprene and synthesis of β-methyltetramethylenediboric acid. Izv. AN SSSR Otd.khim. nauk no.2:362-363 F '62. (MIRA 15:2)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Diborane)
(Isoprene)
(Boric acid)

ZAKHARKIN, L.I.; GAVRILENKO, V.V.; KHORLINA, I.M.

Effect of sodium hydride on ethyl aluminum dichloride and dibromide. Izv.AN SSSR.Otd.khim.nauk no.3:438-441 Mr '62. (MIRA 15:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Aluminum compounds) (Sodium hydride)

ZAKHARKIN, L.I.; KHORLINA, I.M.

Preparation of aldehydes by the reduction of carboxylic esters with diisobutyl-aluminum hydride. Izv.AN SSSR.Otd.-khim.nauk no.3:538 Mr '62. (MIRA 15:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Aldehydes) (Esters) (Aluminum compounds)

ZAKHARKIN, L.I.

Preparation of higher normal primary alcohols from higher normal olefins. Izv.AN SSSR.Otd.khim.nauk no.3:539 Mr '62.
(MIRA 15:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Alcohols) (Olefins)

ZAKHARKIN, L.I.; SOROKINA, L.P.

Condensation of 5,5-dichloro-2,4-pentadienal and 7,7-dichloro-2,4,6-heptatrienal with some ketones. Izv. AN SSSR. Otd.khim.nauk no.5:821-823 My '62. (MIRA 15:6)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Pentadienal) (Heptatrienal) (Ketones)

ZAKHARKIN, L.I.; SAVINA, L.A.

Synthesis of some cyclic alkyl aluminum oxides and alkyl aluminum amides. Izv. AN SSSR. Otd.khim.nauk no.5:824-827 My '62.
(MIRA 15:6)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Aluminum organic compounds)

STANKO, V.I.; KLIMOVA, ..I.; ZAKHARKIN, L.I.

Complexes of decaborane with trialkyl-, triaryl-, trialkyltrithio-phosphites, and trialkyl-, trialkyltrithioarsenites. Izv. AN SSSR Otd.khim.nauk no.5:919-920 My '62. (MIRA 15:6)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Boron hydrides) (Phosphorous acid) (Arsenious acid)

S/062/62/000/006/002/008
B117/B101

AUTHORS: Zakharkin, L. I., Savina, L. A., and Antipin, L. M.

TITLE: Addition order of some aluminum hydrides to butadiene-1,3

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 6, 1962, 996 - 998

TEXT: The addition of lithium aluminum hydride (I), diethyl aluminum hydride (II), and aluminum hydride (III) to butadiene-1,3 was investigated. When lithium aluminum hydride is heated with butadiene-1,3 at 120 - 125°C, an amorphous substance is formed consisting of 80% by weight of C_4 hydrocarbons and 20% by weight of polymeric hydrocarbons (di- and trimers). Chromatographic separation of the C_4 hydrocarbons gave n-butane, butene-1, trans- and cis-butene-2. Thus, I was added to butadiene-1,3 both in 1,2(3,4) and in 1,4 position. The same holds for II which, when heated with butadiene-1,3 at 90-100°C gave an adduct consisting of 20% by weight of C_4 hydrocarbons and 80% by weight polymers. The addition of III to butadiene-1,3 in hexane at 70°C results in a solid powdery adduct. De-

Card 1/2

Card

ZAKHARKIN, L.I.; STANKO, V.I.; CHAPOVSKIY, Yu.A.

Interaction of acetals and ortho-esters with decaborane and diacetonitriledecaborane. Izv.AN SSSR.Otd.khim.nauk no.8: 1118-1119 '62. (MIRA 15:8)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Acetals) (Esters) (Decaborane)

S/062/62/000/007/001/013
B179/B101

AUTHORS: Zakharkin, L. I., and Gavrilenko, V. V.

TITLE: Exchange reactions in the series of aluminum hydrides of lithium, sodium, and potassium

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 7, 1962, 1146 - 1149

TEXT: Mixing of $LiAlH_4$ and NaH suspended in tetrahydrofuran yielded 90.7% $NaAlH_4$, the crystals of which were precipitated by ether additions. The reactions of KH in diglym suspension with $LiAlH_4$ (90% $KAlH_4$) and KH in tetrahydrofuran with $NaAlH_4$ (84.5% $KAlH_4$) were quite similar. The production of $RbAlH_4$ and $CsAlH_4$ is also possible by exchange reaction. 91-93.5% $LiAlH_4$ was obtained by the reaction of $MeAlH_4$ + LiX (Me = Na or K; X = Cl or Br) in ether suspension (Na) or tetrahydrofuran suspension (K) after 3-4 hr mixing in a ball mill. Thus, the preparation of $LiAlH_4$ from less

Card 1/2

Exchange reactions in ...

expensive $NaAlH_4$ is possible. The reaction of $KAlH_4$ with NaBr was incomplete with formation of $KAlH_4$ and $NaAlH_4$ (2:1). The reaction $MeAlR_nH_{(4-n)} + Me'H \longrightarrow Me'AlR_nH_{(4-n)} + MeH$ (Me, Me' = Li, Na, K, with Me' being more electropositive; R = C_2H_5, n-C_3H_7, i-C_4H_9) in benzene was almost quantitative (80 - 90% yield). The complexes $MeAlR_nH_{(4-n)}$ (Me = K,Na) yielded the corresponding lithium compounds by reaction with LiCl or LiBr. There is 1 table.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

SUBMITTED: January 22, 1962

Card 2/2

ZAKHARKIN, L.I.; VINOGRADOVA, L.P.; KORNEVA, V.V.; ZAV'YALOV, S.I.

Synthesis of brassylic and 1,12-dodecanedicarboxylic acids.
Izv.AN SSSR.Otd.khim.nauk no.7:1309-1311 Jl '62. (MIRA 15:7)

1. Institut elementoorganicheskikh soyedineniy AN SSSR i Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Tridecanedioic acid) (Tetradecanedioic acid)

ZAKHARKIN, L.I.; KOVREDOV, A.I.

Syntehesis of trimethyleneboronic acid and alkyldiboronic acid esters and the refractions of some bonds in organoboron compounds. Izv.AN SSSR.Otd.khim.nauk no.9:1564-1571 S '62. (MIRA 15:10)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Boronic acid) (Boron organic compounds)

ZAKHARKIN, L.I., KORNEVA, V.V.

Synthesis of some derivatives of cycloundecane from 1,5,9,-cyclododecatriene. Izv. AN SSSR.Otd.khim.nauk no.10:1817-1821 O '52. (MIRA 15:10)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Cycloundecane) (Cyclododecatriene)

ZAKHARKIN, L.I.; ZHIGAREVA, G.G.

Comment to the work by Brandsma and Arens "Di-(alkyn-1-yl) sulfides." Izv. AN SSSR.Otd.khim.nauk no.10:1871-1872 O '62. (MIRA 15:10)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Acetylene compounds)

ZAKHARKIN, L.I.; GAVRILENKO, V.V.; KHORLINA, I.M.; ZHIGAREVA, G.G.

Reduction of silicon and germanium chlorides and alkoxides by means of sodium and potassium aluminum hydrides. Izv. AN SSSR. Otd. khim. nauk no.10:1872-1874 O '62. (MIRA 15:10)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Silicon chloride) (Germanium chloride)
(Alkali metal aluminum hydrides)

S/062/62/000/011/007/021
B101/B144

AUTHORS: Zakharkin, L. I., Okhlobystin, O. Yu., and Strunin, B. N.

TITLE: Use of organomagnesium compounds for synthesizing organic derivatives of the elements of groups II-V in non-ethereal medium

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 11, 1962, 2002 - 2008

TEXT: It is shown that organomagnesium compounds are easily synthesized from Mg and alkyl halides in yields of 80-92%, even without the usual Grignard catalysts (ether, amines, etc.). Halides of the elements of groups II-V are easily alkylated with the resulting organomagnesium compounds. The reaction was performed in N_2 by addition of alkyl or aryl halides RX (R = C_2H_5 to C_9H_{19}, C_6H_5, $p\text{-}CH_3C_6H_4$; X = Cl, Br, I) to magnesium chips and, as a rule, by utilizing the developed heat for the reaction with the gradually added halide (or oxyhalide) or Hg, B, Al, Si, Ge, Sn, P, As, Sb. The further treatment is carried out as in the usual organomagnesium synthesis. In some cases alkyl and element halides were made to react

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simultaneously with Mg. By choosing the appropriate solvents (heptane, isooctane, decalin, dodecane), work can be done at high concentrations and optimum temperature. The following syntheses were made: tetraethyl tin; triethyl tin fluoride was precipitated with KF from the triethyl tin halides formed as by-products; tri-n-butyl boron, yield 85%; tetra-n-butyl silane, yield 79%; methyl-(n-butyl)-phenyl silane from Mg with n-butyl chloride in heptane, and addition of $(CH_3)(C_6H_5)SiCl_2$, yield 85%, b.p. 125°C/4 mm Hg, n_D^{20} 1.4930, d_4^{20} 0.8749; tetra-n-butyl tin, yield 90%; di-n-butyl tin oxide (addition of $SnCl_4$ at -10°C), yield 65.3%; tri-n-butyl germanium chloride, yield 60%, b.p. 104°C/1 mm Hg; n_D^{20} 1.4638, d_4^{20} 1.0252; butyl dichloro phosphine (addition of PCl_3 at -70°C), yield 45%, tri-n-butyl phosphine, yield 66%; tributyl phosphine oxide, yield 84.4%; tri-n-butyl arsine, yield 80.7%; tri-n-butyl stibine, yield 75%; triisoamyl aluminum, yield 87%, b.p. 152°C/1 mm Hg; triisoamyl tin fluoride (reaction with $SnCl_4$, precipitation with KF), yield 82%; hexyl dichloro phosphine (addition of PCl_3 at -70°C), yield 46%; trihexyl phosphine, yield 63%;

n-octyl mercury iodide, yield 85%, m.p. 96°C; trioctyl phospine oxide: (a) from magnsium and with simultaneous addition of n-octyl iodide and $POCl_3$ in i-octane, yield 85%; (b) from iodineactivated Mg and n-octyl iodide in i-octane, and with addition of $POCl_3$ after cooling to 10°C, yield 87%; tri-n-nonyl phosphine oxide, yield 92.4%, m.p. 35-36°C, b.p. 235-240°C/4 mm Hg; triphenyl aluminum, yield 75.3%; tetraphenyl tin, yield 74%; triphenyl phosphine, yield 72.3%; triphenyl phospine oxide, yield 92.2%; methyl-di-p-tolyl phosphine oxide, yield 80%; triphenyl arsine, yield 75.7%. The most important English-language reference is: D. Bryce-Smith, G. F. Cox, J. Chem. Soc., 1958, 1050.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

SUBMITTED: March 22, 1962

Card 3/3

ZAKHARKIN, L.I.; SOROKINA, L.P.

Preparation of 2-pyrone-5- and 2-pyrone-6-carboxylic acids via β,β -dichloroacrolein. Izv.AN SSSR, Otd.khim.nauk no.11:2096-2097 N '62. (MIRA 15:12)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Pyranonecarboxylic acid) (Acrolein)

Card 1/2

NO REF SOV: 001 OTHER: 000

Card 2/2

3h920
S/079/62/032/003/001/007
D204/D302

11.2223

AUTHORS: Zakharkin, L.I. and Gavrilenko, V.V.

TITLE: Complexes of trialkyl aluminium and dialkyl aluminium hydrides with alkali metal alkyls and hydrides

PERIODICAL: Zhurnal obshchey khimii, v. 32, no. 3, 1962, 689-692

TEXT: An account of the synthesis of (1) $MAlR_4$, where M=Li, Na, K and R=Me, Et, n-Pr and iso-Bu, in hydrocarbons or in the absence of solvent, by the reaction: $3M+4R_3Al \rightarrow 3MAlR_4+Al$, at room temperature, heating towards the end to 60-80°C. Reactivity increased in the order Li < Na < K. Me_3Al reacted with Li only in tetrahydrofuran (THF) or ethereal solutions. (2) $MAlHR_3$ where M=Li, Na, K and R=Me, Et, n-Pr, iso-Bu, and $MAlH_2R_2$, where M=Li, Na, K and R=iso-Bu, by reactions $R_3Al+MH \rightarrow MAlHR_3$ and $R_2AlH+MH \rightarrow MAlH_2R_2$ respectively, using hydrocarbons as solvents. Me_3Al reacted in THF or ether as before. The order of reactivity was as above - NaH

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and LiH required heating to 60-80°C, or higher, to react. (3) $MAlH_2R_2$, where M=Na, K and R=Me, Et, n-Pr, by the reaction $R_2AlCl+2MH \rightarrow MAlH_2R_2 + MCl$, in hydrocarbon solvents. These reactions were facilitated by additions of the corresponding R_2AlH. Experimental details are given for the 4 types of reactions and m.p's of the products are tabulated. The complexes dissolved easily in THF and less readily in ether or hydrocarbons. Solubility was in the order Li > Na > K and fell off with decreasing size of R. Ether and THF formed unstable complexes with some of the products. A method was also developed for the preparation of Me_3Al by : $CH_3I+Al \rightarrow (CH_3)_3Al_2I_3 \xrightarrow{\text{vacuum distillation}} (CH_3)_2AlI \xrightarrow{Mg/180-200^oC} (CH_3)_3Al$. There are 1 table and 4 non-Soviet-bloc references. The references to the English language publications read as follows: E. Beker and H. Sisler, J.Am.Chem. Soc., 75, 5193, (1953); H. Podall, H. Petree and I. Zietz, J.Org. Ch. 24, 1222, (1959); A. Grosse and J. Mavity, J.Org.Ch.,5, 106,(1940).

SUBMITTED: March 31, 1961

Card 2/2

SUBJECT CODE: 27Ap-61 ACC. NR: 00 SUB CODE: OC

NO REF SOV- 000 OTHER: 00 5

S/079/62/032/009/002/011
I040/I242

AUTHORS: Zakharkin, L.I. and Khorlina, I.M.

TITLE: Interaction between diethylaluminum hydride and the diethyl compounds of Zn, Hg, Cd, and Mg

PERIODICAL: Zhurnal obshchey khimii, v.32, no.9, 1962, 2783-2785

TEXT: The reaction of diethylaluminum hydride with the diethyl compounds of Hg, Zn, Cd, and Mg without a solvent was studied in an atmosphere of purified nitrogen. The reaction of $(C_2H_5)_2AlH$ with $(C_2H_5)_2Hg$ at temperatures between -20°C and +100°C yielded $(C_2H_5)_3Al$, C_2H_6, Hg and H_2; the relative amounts of the different products varied with the experimental conditions (temperature, order of mixing, etc.). The formation of ethane indicates that an intermediate unstable compound - ethylmercury hydride - is formed which, either decomposes yielding ethane and free Hg, or reacts with the diethylaluminum hydride to yield mercury hydride which decomposes into free Hg and H_2. The interaction between the diethylaluminum hydride and the diethyl compounds of Zn, Cd, and Mg at 25-40°C

S/079/62/032/009/002/011
I048/I242

Interaction between diethylaluminum...

followed the equation

$$2(C_2H_5)_2AlH + (C_2H_5)_2Mg = 2(C_2H_5)_3Al + MgH_2.$$

Only in the case of Mg was the metal hydride separated, as the hydrides of Cd and Zn are unstable and decompose into the metal and H_2. In all cases, the yield of triethylaluminum exceeded 80%, and the reactions can be used for the synthesis of this compound.

SUBMITTED: August 7, 1961

Card 2/2

ZAKHARKIN, L.I.

ZAKHARKIN, L.I.; OKHLOBYSTIN, O.Yu.; STRUNIN, B.N.

Synthesis of organometallic compounds via organomagnesium compounds in an ether-free medium. Dokl. AN SSSR. 144 no.6:1299-1302 Je '62. (MIRA 15:6)

1. Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR. Predstavleno akad. A.N.Nesmeyanovym.
(Organometallic compounds) (Magnesium organic compounds)

ZAKHARKIN, L.I.; GAVRILENKO, V.V.

Direct synthesis of sodium and potassium aluminum hydrides from elements. Dokl.AN SSSR 145 no.4:793-796 Ag '62. (MIRA 15:7)

1. Institut elementoorganicheskikh soyedineniy AN SSSR. Predstavleno akademikom A.N.Nesmeyanovym.
(Alkali metal aluminum hydrides)

S/062/63/000/001/022/025
B101/B186

AUTHORS: Zakharkin, L. I., and Okhlobystin, O. Yu.

TITLE: Synthesis of organozinc compounds in solvating (solvents)

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 1, 1963, 193

TEXT: When studying the effect of solvents on the reaction of metals with alkyl halides it was found that the reaction of Zn with alkyl halides became greatly accelerated by the presence of solvating media such as dimethyl ether of ethylene or diethylene glycol, dimethyl formamide, dimethyl sulfoxide, etc. In such solvents the alkyl iodides RI (R - CH_3, C_2H_5, n-C_3H_7, i-C_3H_7, n-C_4H_9) reacted spontaneously and exothermically with commercial zinc dust to form the corresponding alkyl zinc iodides in high yields. As regards their accelerating effect the solvents come in the order: isooctane < dibutyl ether ≪ diglym < dimethoxy ethane ≤ dimethyl formamide < dimethyl sulfoxide. With the use of a zinc-copper pair, RBr (R - C_3H_7, C_4H_9, C_6H_{13}) also react with Zn after short heating; the in-

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duction period can be eliminated by adding iodide. The low-molecular alkyl zinc bromides were obtained in 80% yields. The yield drops with increasing chain length of the radical. Benzyl chloride reacts readily and exothermically with Zn in dimethyl formamide, the yield of $C_6H_5CH_2ZnCl$ being more than 80%. Allyl zinc chloride forms in dimethyl sulfoxide in equally high yields. This synthesis cannot be carried out in dimethyl formamide because allyl zinc chloride reacts with this solvent.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

SUBMITTED: November 4, 1962

ZAKHARKIN, L.I.; KHORLINA, I.M.

Reduction of carboxylic esters to aldehydes by diisobutylaluminum hydride. Izv.AN SSSR.Otd.khim.nauk no.2:316-319 F '63. (MIRA 16:4)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Esters) (Aldehydes) (Aluminum compounds)

ZAKHARKIN, L.I.; ZHIGAREVA, G.G.

Dimerization of butadiene to cis, cis-1,5-cyclooctadiene catalyzed by π-complex compounds of nickel. Izv.AN SSSR.Otd. khim.nauk no.2:386 F '63. (MIRA 16:4)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Butadiene) (Cyclooctadiene)

ZAKHARKIN, L.I.

Reaction of ethyl magnesium bromide with 1,1,1,5-tetrachloropentane.
Izv.AN SSSR Otd.khim.nauk no.5:939-941 My '63. (MIRA 16:8)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Magnesium organic compounds) (Pentane)

L 12715-63 EPR/EWP(j)/EPF(c)/EWT(m)/ane ASD/ESD-3 Pe-4/Pe-4/Pr-4 RM/WW
ACCESSION NR: AP3002303 S/0062/63/000/006/1145/1147

73

AUTHOR: Zakharkin, L. I.; Gavrilenko, V. V.

TITLE: Preparation of complex aluminum acetylides, MAl (C triple bond CR) sub 4, where M = Li, Na, or K, and their reactions with carbonyl compounds

SOURCE: AN SSSR. Izv. Otdeleniye khimicheskikh nauk, no. 6, 1963, 1146-1147

TOPIC TAGS: complex aluminum acetylides, carbonyl compounds, monosubstituted acetylenes, aluminum, lithium aluminum hydrides, acetylenic alcohols, substituted propiolic acids

ABSTRACT: The reaction of monosubstituted acetylenes with lithium aluminum hydride to form lithium aluminum acetylides described earlier has been found to be general for alkali metal aluminum hydrides. The complex aluminum acetylides react with carbonyl compounds to give acetylenic alcohols in yields from 40 to 80%. At elevated temperatures they also react with carbon dioxide to give substituted propiolic acids in good yields.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Organoelemental Compounds, Academy of Sciences SSSR)

SUBMITTED: 16 Apr 63 DATE ACQ: 16 Jul 63 ENCL: 00
SUB CODE: 00 NO REF SOV: 000 OTHER: 002
Card 1/1

STRUNIN, B.N.; OKHLOBYSTIN, O.Yu.; ZAKHARKIN, L.I.

Organomagnesium synthesis of some organophosphorus compounds in ester-free medium. Izv.AN SSSR.Ser.khim. no.8:1373-1376 Ag '63. (MIRA 16:9)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Phosphorus organic compounds) (Grignard reagents)

ZAKHARKIN, L.I.; GAVRILENKO, V.V.; MASLIN, D.N.

Reduction of carboxylic acid esters to aldehydes with sodium aluminum hydride. Izv.AN SSSR.Ser.khim. no.8:1526 Ag '63. (MIRA 16:9)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Esters) (Aldehydes) (Sodium aluminum hydride)

ZAKHARKIN, L.I.; MASLIN, D.N.; GAVRILENKO, V.V.

Interaction of boron trifluoride with sodium aluminum hydride
Zhur. neorg. khim. 9 no.6:1350-1357 Je'63 (MIRA 17:8)

ZAKHARKIN, L.I.; OKHLOBYSTIN, O.Yu.; STANKIN, B.N.

Synthesis of organotin compounds by means of n' alkyls. Zhur. prikl. khim. 36 no.9:2034-2038 D '63. (MIRA 17:1)

ZAKHARKIN, L.I.; GAVRILENKO, V.V.

Metallization of benzene and thiophene by sodium tetraethylaluminum. Izv. AN SSSR Ser.khim. no.10:1882 O '63.

Metallization of furan and thiophene by sodium and potassium aluminum hydride. 1882 (MIRA 17:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

KOST, V.N.; VASIL'YEVA, T.T.; ZAKHARKIN, L.I.; FREYDLINA, R.Kh.

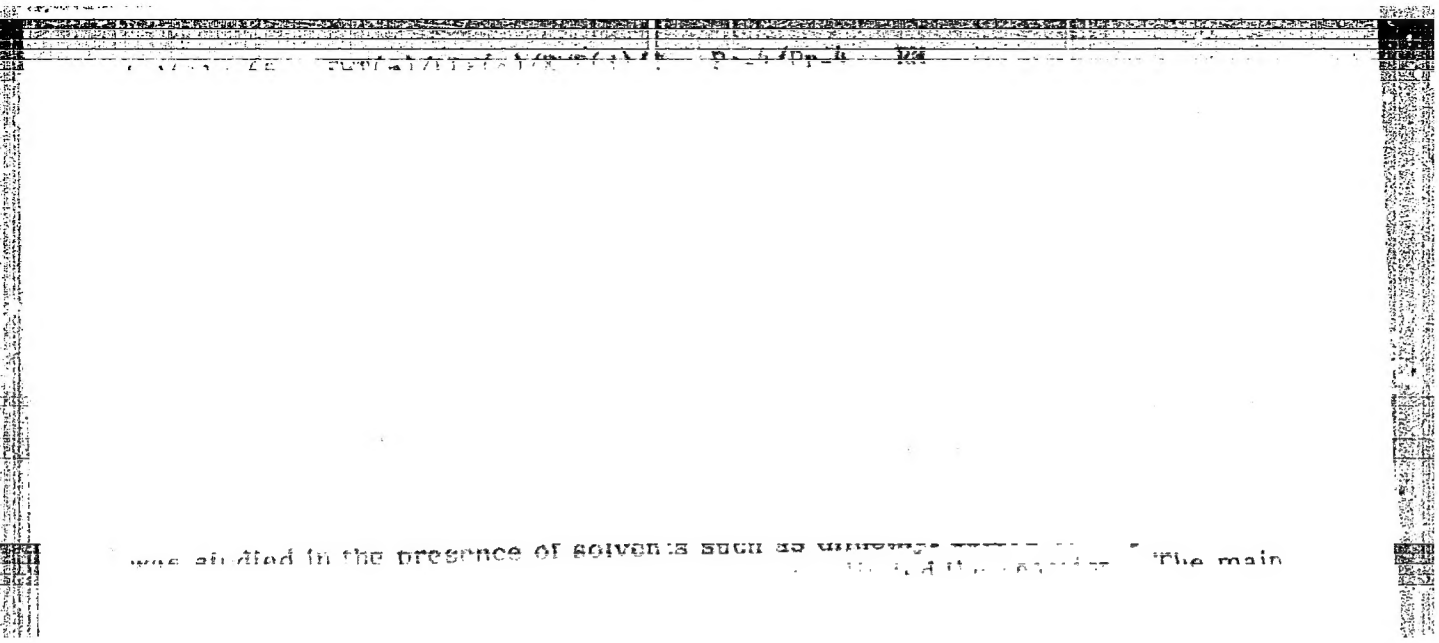
Introduction of the radical $CCl_2 \rightarrow CHCH$ - into unsaturated molecules containing an α,α -vinyl dichloride group. Izv. AN SSSR. Ser. khim. no.11:1992-1995 N '63. (MIRA 17:1)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

ZAKHARIKIN, L.I.; STANKO, V.I.; BRATTSEV, V.A.; CHAPOVSKIY, Yu.A.; STRUCHKOV, Yu.T.

Structure of $B_{10}C_2H_{12}$ ("baren") and its derivatives. Izv. AN SSSR. Ser. khim. no.11:2069 N '63. (MIRA 17:1)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.



was studied in the presence of solvents such as [illegible] The main

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ACCESSION NR: AP4035[illegible]

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